



**RESPONSES TO JULY 8, 2009 USEPA COMMENT LETTER  
RCRA FACILITY INVESTIGATION REPORT  
SEVERATAL WHEELING, INC. (formerly known as  
WHEELING PITTSBURGH STEEL CORPORATION) FACILITY  
FOLLANSBEE, WEST VIRGINIA**

**PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT (FOUR LEASED PARCELS)**

**Comment No. 1**

Page 15, Murphy Consolidated Leased Parcel: The text recommends that stained soils and residual waste materials on the ground be excavated and disposed offsite, and that soil sampling should be performed where soil is excavated to confirm that the contamination has been removed. WPSC should conduct sampling prior to excavation to identify contaminants (presumably need to do this anyway to characterize for disposal, and this may allow a more limited analyte list for post excavation sampling).

**Response Comment No. 1**

A surface soil sample will be collected from the stained soil/waste material area prior to excavation as described in the enclosed Phase II Workplan.

**Comment No. 2**

Page 15 - Provenzano Trucking Leased Parcel: The text recommends at least one boring be advanced to analyze soil and groundwater conditions for the two USTs. WPSC should determine whether the USTs remain, if they remain they should be located and removed, this should be followed by post excavation sampling at each location.

**Response Comment No. 2**

The boring recommended in the Phase I ESA report was installed during the initial phase of the RFI in 2005 and no significant contamination was detected. Nevertheless, a geophysical survey will be performed as suggested in this comment to determine whether the USTs remain. If the USTs are identified as a result of the geophysical survey, excavation will be performed to unearth and positively identify the USTs. If the existence of the USTs is confirmed, they will be removed and confirmatory soil samples will be collected in accordance with the West Virginia UST Regulations. Any corrective action that may be required based on the results of the confirmatory sampling will also be performed in accordance with the Regulations.

**Comment No. 3**

The scope of the proposed additional activities (with changes suggested above) is approved as a next step. WPSC should provide a work plan for these activities.



## **RESPONSES TO JULY 8, 2009 U.S. EPA COMMENT LETTER (Continued)**

### **Response Comment No. 3**

The additional investigation activities are described in the enclosed Phase II Workplan. Note that the soil borings recommended in the Phase I ESA report for the Murphy Consolidated leased property, the Provenzano Trucking property, and the former Murphy Construction leased property were installed during the RFI in 2005 and information related to those borings was included in the September 2005 draft RFI Report.

### **RCRA FACILITY INVESTIGATION REPORT**

#### **Comment No. 1**

WPSC should provide isoconcentration maps for selected constituents for each aquifer, e.g., benzene, naphthalene, arsenic - the maps presenting results, concentration at wells or just a table on the figure, are difficult to use. These can be provided as part of the next phase of work.

#### **Response Comment No. 1**

Isoconcentration maps will be provided in the final RFI Report.

#### **Comment No. 2**

Page 3-10, Free Product (also discussed at page 9-7, Free Product in Subsurface): The RFI Report indicates that Tar Decanter Sludge (TDS) materials have reportedly been disposed in the BOF Residuals Area and Plant Debris Area, but have not been investigated yet. Characterization of these areas should be proposed for the next phase of work.

#### **Response Comment No. 2**

Additional investigation activities will be performed in these areas as described in the enclosed Phase II Workplan.

#### **Comment No. 3**

Section 3: Cross-section B-B' should show extent of free product encountered in the Main Plant area.

#### **Response Comment No. 3**

Cross-section B-B' will be revised in the final RFI Report as suggested.

#### **Comment No. 4**

Section 3: Cross-section C-C' does not show TDI-1-S, and the screened interval and sand pack elevation is not shown on Table 3-2. Even if the screened interval is not known, at least the depth of the well should be known.



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**Response Comment No. 4**

Cross-Section C-C' and Table 3-2 will be revised in the final RFI report to reflect the depth of well TDI-1-S.

**Comment No. 5**

Section 3: Cross-sections should show extent of dissolved-phase impacts. This can provide as part of the next phase of work.

**Response Comment No. 5**

Cross-sections presented in the final RFI Report will be revised to show the extent of dissolved phase contaminant concentrations.

**Comment No. 6**

Section 3: There are no wells directly downgradient of boring SBE7, which detected 2700 ug/l of benzene (among other constituents) in a grab groundwater sample. The extent of groundwater contamination from this area should be determined in the next phase of work.

**Response Comment No. 6**

Two additional monitoring wells will be installed downgradient of boring SBE7 as described in the enclosed Phase II Workplan.

**Comment No. 7**

Section 3: There are no wells directly downgradient of SBC1, which exceeds SSLs soil to groundwater for VOCs (benzene, toluene, xylene). Wells should be installed in the next phase of work.

**Response Comment No. 7**

Three additional monitoring wells will be installed downgradient of boring SBC1 as described in the enclosed Phase II Workplan.

**Comment No. 8**

Section 3: There are no wells directly downgradient of MWC2I and MWC2P, both of which exceed SSLs for soil to groundwater screening for benzene. Wells should be installed in the next phase of work.

**Response Comment No. 8**

The area downgradient of wells MWC2I and MWC2P is inaccessible due to the existence of the coal storage pits. Therefore, additional wells cannot be installed in this area.



## **RESPONSES TO JULY 8, 2009 U.S. EPA COMMENT LETTER (Continued)**

### **Comment No. 9**

Section 7.2.3.2, Exposure Dose Estimates, Construction Worker Ingestion Rate, p 7-13: The soil ingestion rate utilized to evaluate construction worker exposure should be 330 mg/day, as described in the 2002 EPA Supplemental Guidance for Developing Soil Screening Levels (SSLs) for Superfund Sites. Note that there is no adjustment of the soil ingestion rate based on a particular soil adherence rate; the soil adherence rate is used only to evaluate dermal exposure.

### **Response Comment No. 9**

Severstal Wheeling, Inc. agrees with the Agency's comment. The intake equations for incidental ingestion of soils by construction workers will be revised in the final RFI Report to include a soil ingestion rate of 330 mg/day.

### **Comment No. 10**

Section 7.2.3.2, Inhalation Exposures, p 7-14: The equivalent chemical concentration in air is determined by multiplying the concentration in soil by 1/VF or 1/PEF.

### **Response Comment No. 10**

Severstal Wheeling, Inc. agrees with this comment. The air concentrations in the risk assessment worksheets were correctly calculated by multiplying the soil concentration by 1/VF or 1/PEF. However, the text in Section 7.2.3.2 incorrectly described the procedure. The text will be revised accordingly in the final RFI Report.

### **Comment No. 11**

Section 7.2.3.2, Exposure Dose Estimates, Outdoor Air, p 7-15: Many of the values listed on this page do not agree with values listed in the table (not numbered) appearing on the last page of Appendix Q. As a result, different values for VF are returned using each set of inputs. In addition, the value listed for  $Q/C_{vol}$  on page 7-15 could not be reproduced by the EPA reviewer using the provided inputs. Clarify, and provide documentation for all inputs that are based on site-specific information.

### **Response Comment No. 11**

The values used in the equations on page 7-15 will be compared with the values used in the risk assessment worksheets. Discrepancies will be corrected and clarified in the final RFI Report. Documentation will be provided for all inputs that are based on site-specific information.

### **Comment No. 12**

Section 7.2.3.2, Exposure Dose Estimates, Indoor air, p 7-16: Benzene, 1,2-DCA, and toluene are noted as being evaluated for potential indoor air vapor intrusion. The vapor intrusion evaluation should include all potential vapor-forming chemicals such as naphthalene, etc. Note that an inhalation unit risk value for



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naphthalene, previously unavailable, now appears on the current EPA regional risk screening table. In addition, it appears that the 95% UCL for groundwater contaminants was calculated using data from across the entire site. This will serve to reduce the resulting concentrations, and is not a valid method for determining the concentration term for groundwater. Risks should be estimated for the center, or most contaminated portion of the plume of groundwater contaminants. It is also noted that the presence of free product in the subsurface will increase potential risks from indoor air exposure.

### **Response Comment No. 12**

The vapor intrusion risk calculations will be revised to include all vapor-forming chemicals (including naphthalene) that were detected in soil and groundwater, respectively. The vapor intrusion calculations for groundwater will also be revised to include the maximum detected concentrations instead of the 95% UCL.

### **Comment No. 13**

Section 7.2.3.2, Exposure Dose Estimates, Indoor Air p 7-17 and Appendix Q: The soil type utilized in the J & E model and in modeling of soil contaminant concentrations to outdoor air (sandy loam) should be supported, especially in consideration of the large amounts of fill material and slag in place on the WP site as documented in Section 3.4.2.

### **Response Comment No. 13**

Soil properties used as inputs in the J&E modeling will be supported by information recorded on the soil boring logs. The text of the final RFI Report will be revised to include this information.

### **Comment No. 14**

Section 7.2.3.2, Exposure Dose Estimates, Indoor Air, p 7-17: The air exchange rate of  $2 \text{ hr}^{-1}$  is an ideal rate and exceeds J&E model recommended defaults. Independent supporting documentation that this air exchange rate exists for current on site buildings is not provided. In addition, there is no assurance that future building placed on site will have an air exchange rate approaching this value. Risks for indoor air are therefore likely underestimated.

### **Response Comment No. 14**

As discussed during our conference call on August 12, 2009, potential exposures via the indoor air pathway for current site conditions will be addressed under the OSHA program for the facility. The OSHA program is currently being revised to include all on or below-grade structures that are occupied by workers and could potentially be impacted by vapor intrusion from soil or groundwater. The revised program will be provided to U.S. EPA when it is completed.

The risk calculations for the future use scenario will be revised to include the recommended default air exchange rate in the J&E model.



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### Comment No. 15

Section 7.2.3.2, Exposure Dose Estimates, Bioaccessibility, p 7-20: Application of a bioaccessibility factor to reduce exposure estimates is not an accepted practice in current EPA risk assessment guidance, nor is any objective evidence presented to document the presence of the same types of slag described in the Proctor report in all Wheeling Pitt soil samples. It is noted that the cited study provided accessibility factors, but did not employ adherence factors when assessing risk from dermal exposures. Use of accessibility factors with adherence factors results in an increased underestimate of risks from dermal contact with soil; worker soil risks calculated in accordance with EPA guidance will be higher, especially for risk drivers such as manganese.

### Response Comment No. 15

This comment was discussed in some detail during our August 12, 2009 conference call. As discussed during the call, the broader issue is that slag has been used historically at this site and other sites throughout the upper Ohio River valley as fill to raise the ground surface out of the river flood plain and, therefore, is considered anthropogenic background. As we discussed during our call, further discussion of this issue will be required before finalizing the risk assessment and RFI.

Our responses to the specific issues raised in this comment are provided below.

With regard to EPA's acceptance of the use of a bioaccessibility factor to reduce exposure estimates, we note that several EPA guidance documents acknowledge or allow the use of a bioaccessibility factor. The document entitled Guidance for Evaluating the Oral Bioavailability of Metals in Soils for Use in Human Health Risk Assessment (EPA, 2007) states that the purpose of the document is *"to provide guidance to Regional risk assessors on how to assess site-specific oral bioavailability of metals in soils for use in human health risk assessments..."* The Scope section of the document also states that *"This document supplements the guidance in Appendix A of the Risk Assessment Guidance for Superfund (RAGS), Part A, regarding adjustments to absorption (EPA, 1989)."* Supplemental guidance for Superfund (EPA, 1991) reinforces the appropriate use of site-specific parameters in that *"...exposure parameters presented in this document are generally considered appropriate and should be used in baseline risk assessments unless alternate or site-specific values can be clearly justified by supporting data."* In addition, several passages from RAGS Part A (EPA, 1989) support the use of bioavailability factors in risk assessment practice. These passages include the following:

- *"The specific values [exposure parameters] identified should be regarded as general recommendations, and could change based on site-specific information".* According to this statement, reliable site-specific data may be used in place of default (non site-specific) exposure and toxicity factors.
- *"Adjustments also may be necessary for different absorption efficiencies depending on the medium of exposure (e.g., contaminants ingested with food or soil might be less completely absorbed than contaminants ingested with water)".*
- *"If the medium of exposure in the site exposure assessment differs from the medium of exposure assumed by the toxicity value (e.g., RfD values usually are based on or have been adjusted to*



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*reflect exposure via drinking water, while the site medium of concern may be soil), an absorption adjustment, may on occasion, be appropriate. For example, a substance might be more completely absorbed following exposure to contaminated drinking water than following exposure to contaminated food or soil (e.g., if the substance does not desorb from soil in the gastrointestinal tract)".*

The last two statements, taken from Appendix A in RAGS Part A, specifically address the consideration of medium-specific bioavailability information in site-specific risk assessments, which are referred to as adjustments for absorption efficiency.

With regard to the issue of whether the slag at the Severstal site is the same type of slag described in the Proctor report, we note that the use of slag as fill at the site and at other sites in the Ohio River valley has not been well documented and a direct correlation with the slag described in the Proctor Report is not feasible. However, we note that concentrations of the primary risk drivers iron, manganese, and vanadium detected at the site (up to 240,000 mg/kg, 43,000 mg/kg, and 650 mg/kg, respectively) are within the range of concentrations cited in the Proctor report and are well above the natural background for these constituents in West Virginia (28,000 mg/kg, 770 mg/kg, and 65 mg/kg as listed in the USEPA Guidance for Developing EcoSSLs).

With regard to the comment that the Proctor study "provided accessibility factors, but did not employ adherence factors when assessing risk from dermal exposures", we note that this statement is not correct. Table 5 on page 691 of Proctor 2002 lists the adherence factors used in the risk assessment intake equations for construction workers, all other scenarios (i.e., other receptors) and farmers. The use of skin adherence factors is also described on pages 697 and 698 of Proctor 2002.

### **Comment No. 16**

Table 7-7, Exposure Parameters: In addition to modification of the construction worker soil ingestion rate as noted above, the following exposure parameters should be modified in accordance with EPA guidance: 1) the construction worker exposure frequency should be 250 days/year for 1 year (Source: *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites*, EPA OSWER no. 9355.4-14, December 2002); 2) the outdoor/indoor exposure time listed for inhalation for resident adults/children is listed as 7 hours, which is not an EPA recommended value for either indoor or outdoor air exposure. Furthermore, the exposure times listed in Table 7-7 do not agree with values used in Appendix Q calculations of outdoor/indoor air risks. In Appendix Q, an exposure time of 22.5 hours is listed for adults for both indoor and outdoor air, while an exposure time of 18 hours is listed for children for both indoor and outdoor air. No supporting reference appears for either Appendix Q value. According to the EPA *Exposure Factors Handbook*, the 90<sup>th</sup> percentile residence time indoors is 23.25 hours (Table 15-131). This can be rounded to 23 hours, with the remaining 1 hour spent out of doors in a residential setting.

### **Response Comment No. 16**

Severstal Wheeling, Inc. does not believe that 250 day/year for one (1) year is an appropriate exposure frequency for construction workers. Construction/excavation workers will likely be involved in focused



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excavation activities for limited or short durations (i.e., a few weeks to six months). Other guidance documents cite exposure frequencies of as few as 20 days per year (Risk Assessment Information System, U.S. Department of Energy) to 120 days per year (Ohio EPA Voluntary Action Program). An exposure frequency of 180 days per year for a future construction worker is a conservative estimate for this site.

The residential inhalation exposure times listed on Table 7-7 were incorrectly reported. The inhalation risk worksheets in Appendix Q assumed that an adult resident would routinely spend 22.5 hours indoors and 1.5 hours outdoors. It was also assumed that a child resident would routinely spend 18 hours indoors and 6 hours outdoors. These values were taken from pages 15-15 and 15-16 (Section 15.4 Recommendations) of U.S. EPA's Exposure Factors Handbook, Volume III (EPA/600/P-95/002Fc; August 1997). Table 7-7 will be revised to reflect the exposure times used in the risk assessment worksheets for evaluation of the indoor and outdoor air pathways.

### **Comment No. 17**

Section 8.2.3, Identification of Constituents of Interest and Table 8-6 (Ecological Screening Results Alluvial Aquifer Groundwater) and Appendix W (Table W-1): While Table 8-6 correctly lists surface water quality criteria as the groundwater screening criteria for the Ohio River, Table W-1 in Appendix W incorrectly lists these surface water criteria diluted by an Ohio River dilution factor. This approach, while sensible for the water column, is not conservative enough to screen groundwater chemicals for aquatic sediment accumulation. Table W-1 would have been much more useful if it included the correct undiluted surface water criteria.

### **Response Comment No. 17**

Report Table W-1 will be made consistent with Table 8-6 in the Final RFI Report.

### **Comment No. 18**

Section 8.2.4.6, Food Chain: A terrestrial omnivore such as the raccoon should have been included to combine exposures to both contaminated aquatic and terrestrial invertebrates and contaminated plants. This receptor should be included in the BERA.

### **Response Comment No. 18**

A terrestrial omnivore, such as a raccoon, will be evaluated in the Baseline Ecological Risk Assessment (BERA) as an ecological receptor.

### **Comment No. 19**

Section 8.2.5.1, Threatened or Endangered Species Considerations: This section states that site groundwater will diffusely enter and rapidly mix in the Ohio River. While this is true for the water column, groundwater typically enters through aquatic sediment, and contaminants can trap in the sediments and/or remain more concentrated in the sediment porewater in which benthic invertebrates





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reside. This is the exposure point of concern for contaminated groundwater entering surface water bodies. Please refer to the comment for Sections 8.3.2.2 and 8.3.2.3 for further direction.

### **Response Comment No. 19**

Please refer to the Response to Comments 25 and 26 which address SLERA Sections 8.3.2.2 and 8.3.2.3.

### **Comment No. 20**

Section 8.2.8, Comparison of Surface Water and Sediment Samples to Background Data and Selection of Constituents of Concern and Figure 3-1, Site Investigation Map Plant Area: Please explain why the Mahan's Run sample locations SWHO6W through SWH10W should be considered unaffected background. This portion of the stream is close to the Former PGT Trucking leased property and Former Murphy Construction leased property, as well as previous USTs. As such, these locations do not seem to meet the definition of "background" unaffected by the site.

### **Response Comment No. 20**

The results of the Phase I assessments of the Former Murphy Construction and PGT Trucking sites, as well as results of sampling near the former USTs, do not indicate any sources of contamination from these properties that would impact Mahan's Run. Nevertheless, three additional surface water/sediment samples will be collected in Mahan's run upstream of the former Murphy Construction property to further evaluate background conditions as discussed in the enclosed Phase II Workplan.

### **Comment No. 21**

Section 8.2.8.2 (Sediment), Table 8-9 (Ecological Screening Results Mahan's Run Sediment), Appendix Y (Table Y-1) and Appendix U (Table U-1): Table 8-9 states that benzo(b)fluoranthene background (upstream) concentrations were found to be statistically greater than downstream. Table U-1, showing the statistical comparison, reversed the averages and medians for benzo(b)fluoranthene, showing the downstream mean for the upstream and vice versa, according to Table Y-1, which shows the individual results. According to Table Y-1, the downstream concentrations are significantly greater than the upstream, indicating that benzo(b)fluoranthene should be selected as a COI. Please revise all applicable sections and tables accordingly.

### **Response Comment No. 21**

In the Final RFI Report, Table 8-9, Table Y-1, and Table U-1 will provide consistent results. In addition, benzo(b)fluoranthene will be selected as COI since it is significantly greater downstream than upstream and all sections of the report will be revised accordingly.

### **Comment No. 22**

Section 8.3.2.1, Facility Soils and Table 8-10, Hazard Index - Surface Soil to Plants:



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- a) It should be noted that the maximum soil contaminant concentrations should also have been compared to the Efroymson et al., 1997 soil benchmarks for soil invertebrates and heterotrophic processes. Luckily, the Efroymson et al. soil benchmarks for phytotoxicity are predominantly lower than the soil invertebrate benchmarks, so this approach was protective of both.
- b) Some of the SVOC maximum concentrations listed in Table 8-10 are incorrect as compared to those listed in Table 8-5 (Ecological Screening Results Surface Soil), such as the maximum for p-cresol (1,100 mg/kg, but is 1.1 mg/kg according to Table 8-5). Please rectify.

### **Response Comment No. 22**

Comment a) does not require a response. Comment b): In the Final RFI Report, the maximum SVOC values in Tables 8-5 and 8-10 will be made consistent (e.g., p-cresol, Table 8-5, 1,100 µg/kg and Table 8-10, 1.1 mg/kg; 2,4-Dimethylphenol, Table 8-5, 520 µg/kg, and Table 8-10, 0.52 mg/kg).

### **Comment No. 23**

Section 8.3.2.1, Bioaccumulation of COIs in Soil Invertebrates and Vertebrates and Table 8-17, Hazard Index – Bioaccumulation of COIs in Meadow Vole via Ingestion of Plants:

- a) Tables 8-22 and 8-23 appear to be missing, so it is impossible to verify the meadow vole food chain calculations. In addition, the Gao and Zhu citation in Reference Section 10 is incomplete; it does not include the journal information. Please provide the tables and reference.
- b) The word “mean” should be removed from the dose terms, such as “mean vole dose,” because the values are based on maximums, not means.
- c) Footnotes 1 through 4 do not seem to apply to Table 8-17.
- d) This section and footnote (6) of Table 8-17 state that Ecological Screening Levels were used to calculate hazard quotients. This is incorrect. Receptor doses in mg/kg/day must be compared to NOAELs and LOAELs in mg/kg/day, applicable to the particular species. Ecological Screening Levels not only do not necessarily represent NOAELs or LOAELs, ESLs in mg/kg are not even in the correct units for comparison to the dose units. NOAELs and LOAELs can be found in *Toxicological Benchmarks for Wildlife: 1996 Revision* (Sample, Opresko, and Suter, 1996; Oak Ridge National Laboratory). Please revise to replace all ESLs with the reliably documented Sample et al., 1996 NOAELs for hazard quotient calculations. The Sample et al., 1996 toxicity value for benzo(a)pyrene may be used as a surrogate for the other mutagenic PAHs.
- e) This section states that 13 of the 21 COIs for the meadow vole could not be evaluated due to an absence of data on uptake factors for those chemicals. When uptake factors cannot be found, it is customary to either use a surrogate value based on similar chemical structure, or to use a conservative default value of 1. Please revise accordingly.

### **Response Comment No. 23**

- a) There are no Tables 8-22 and 8-23. Table 8-17 addresses the risk from COIs transferred to plants and eaten by meadow vole. The Final RFI Report will correct this error and provide the following complete reference: Gao, Y. and L. Zhu. 2004, Plant uptake, accumulation and translocation of phenanthrene and pyrene in soils. 2004, *Chemosphere* 55(9): 1169-1178.
- b) We agree - the word “mean” will be removed from Table 8-17 in the Final RFI Report.



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- c) Footnotes 1-4 are consistent with the text in Section 8.3.2.1, page 8-25. They explain how the maximum soil concentrations were converted to plant concentrations using uptake factors from various references. They also provide the assumption on what percentage of the voles' diet consists of plants.
- d) The term ESL will be removed from Table 8-17 in the Final RFI Report and the Sample et al. 1996 NOAEL data will be provided in the Final RFI Report.
- e) When an uptake value for a parameter cannot be found, a default value of 1 will be employed in the revised Table 8-17 to be provided in the Final RFI Report.

### **Comment No. 24**

Tables 8-18 (Hazard Index - Bioaccumulation of COIs in American Robin) and 8-19 (Hazard Index - Bioaccumulation of COIs in Red Tailed Hawk):

- a) Some of the SVOC maximums listed in these tables are incorrect as compared to those listed in Table 8-5 (Ecological Screening Results Surface Soil), such as the maximum for p-cresol (1,100 mg/kg, but is 1.1 mg/kg according to Table 8-5). Please rectify.
- b) When uptake factors cannot be found, as is the case for many chemicals in these tables, it is customary to either use a surrogate value based on similar chemical structure, or to use a conservative default value of 1. Please revise accordingly.
- c) Many of the toxicity values in these tables are not from Sample et al., 1996. As explained in the comment above, please replace all ESLs with the reliably documented Sample et al., 1996 NOAELs for hazard quotient calculations.
- d) If the toxicity values for the PAHs in these tables are actual NOAEL values in mg/kg/day, please provide the reference for these values.

### **Response Comment No. 24**

- a) In the Final RFI Report, the maximum SVOC values in Tables 8-5 and 8-10 will be made consistent (e.g., p-cresol, Table 8-5, 1,100 µg/kg and Tables 8-18 and 8-19, 1.1 mg/kg; 2,4-Dimethylphenol, Table 8-5, 520 µg/kg and Tables 8-18 and 8-19, 0.52 mg/kg).
- b) When an uptake value for a parameter cannot be found, a default value of 1 will be employed in the revised Tables 8-18 and 8-19 to be provided in the Final RFI Report.
- c) The term ESL will be removed from Tables 8-18 and 8-19 in the Final RFI Report and the Sample et al. 1996 NOAEL data will be provided in the Final RFI Report.
- d) The Sample et al. 1996 NOAEL data or other appropriately referenced NOAEL data will be provided in the Final RFI Report.

### **Comment No. 25**

Section 8.3.2.2, Facility Groundwater: This section states that some groundwater chemicals could not be evaluated due to the absence of NOAELs for those chemicals. This term is incorrect; screening benchmarks derived from phytotoxicity tests in mg/L were used for comparison to groundwater concentrations, not body weight-based doses. Please revise to replace NOAEL with screening benchmark.



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### **Response Comment No. 25**

In the Final RFI Report, the term “NOAEL” will be removed from this section of the report and replaced with the term “screening benchmark concentration (SBC).”

### **Comment No. 26**

Sections 8.3.2.2 (Facility Groundwater) and 8.3.2.3 (Surface Water) and Table 8-13 (Hazard Index - Alluvial Groundwater to Aquatic Life in Ohio River):

- a) While the dilution factor approach is acceptable for the Ohio River water column, groundwater typically enters through aquatic sediment, and contaminants can trap in the sediments and/or remain more concentrated in the sediment porewater in which benthic invertebrates reside. This is the exposure point of concern for contaminated groundwater entering surface water bodies. Therefore, please add the following to Table 8-13: a comparison of the maximum groundwater concentrations without the dilution factor to water quality criteria as a conservative screen for sediment effects.
- b) Please revise Table 8-13 to include either USEPA National Recommended Water Quality Criteria or EPA Region III freshwater benchmarks ([www.epa.gov/reg3hwmd/risk/eco/index.htm](http://www.epa.gov/reg3hwmd/risk/eco/index.htm)) for all chemicals lacking WVDEP Water Quality Criteria.

### **Response Comment No. 26**

In the Final RFI Report, the suggested changes will be made to Table 8-13.

### **Comment No. 27**

Table 8-12, Hazard Index - Groundwater to Plants Hillside Area: This table is missing screening benchmarks for o-cresol, naphthalene and phenol that can be found in the Efroymson et al., 1997 reference. Please revise to include.

### **Response Comment No. 27**

In the Final RFI Report, the suggested changes will be made to Table 8-12.

### **Comment No. 28**

Section 8.3.2.4, Facility Sediments and Table 8-20, Hazard Index - Aquatic Receptors Exposed to Sediment in Mahan's Run:

- a) The ESLs in Table 8-20 are incorrectly labeled as mg/kg/day; these values are actually sediment benchmarks in mg/kg or ug/kg units. Please correct.
- b) The ESL units for all SVOCs in Table 8-20 are ug/kg, not mg/kg, resulting in hazard quotients exceeding one. Please correct.



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### **Response Comment No. 28**

In the Final RFI Report, the suggested changes will be made to Table 8-20.

### **Comment No. 29**

Section 8.3.2.4, Facility Sediments and Table 8-21, Hazard Index - Bioaccumulation of COIs in Indiana Bat:

- a) Regarding the biota sediment accumulation factors in Table 8-21, please revise to also include factors from the reference *Biota Sediment Accumulation Factors for Invertebrates: Review and Recommendations for the Oak Ridge Reservation* (Bechtel Jacobs Company, 1998, Oak Ridge National Laboratory), which will provide a second set of invertebrate concentrations.
- b) For all chemicals without available biota sediment accumulation factors in Table 8-21, please use a default value of 1.
- c) The values listed as NOAELs from Sample et al., 1996 in Table 8-21 are not NOAELs. They are screening values for food, and cannot be used to compare to body weight-based doses. Revise to use the NOAELs from this reference.

### **Response Comment No. 29**

In the Final RFI Report, the suggested changes will be made to Table 8-21.

### **Comment No. 30**

Section 8.3.5, Scientific Management Decision Point: Prior to producing a BERA, please provide EPA with a figure of all surface soil, surface water and sediment sample locations used in the SLERA superimposed on the habitat map. For habitat types adjacent to contaminated areas that have not been sampled, please include on this figure proposed sampling locations, to include the riparian forest and wetland habitats. The BERA will be much more useful if data from actual habitat locations can be used, versus extrapolating from the industrialized areas where the majority of samples were obtained.

### **Response Comment No. 30**

A map of previous and proposed sampling locations superimposed on the habitat map, as well as a description of the proposed additional samples, is provided as Figure 2 in the enclosed Phase II Workplan.

### **Comment No. 31**

Conclusions, p. 9-4, fourth bullet: The existence of slag and industrial fill on site and throughout the Ohio River valley should be documented with independent sources. This is important especially due to the presence of manganese, one of the risk-drivers for soil exposure.

## **RESPONSES TO JULY 8, 2009 U.S. EPA COMMENT LETTER (Continued)**

### **Response Comment No. 31**

We are not aware of any “independent sources” documenting the use of slag as backfill on the site and surrounding area. Also, please see response to Comment No. 15.

### **Comment No. 32**

Conclusions, p. 9-4 and 9-5, Surface Soil and Subsurface Soil: The text does not discuss screening relative to SSLs (soil to groundwater). Soil to groundwater screening is presented on the tables shown on Figures 6-1 and 6-2, and there are many instances where the detected concentrations exceed the screening value. This should be discussed in the text, data gaps identified, and additional work proposed. Figures 6-1 and 6-2 should graphically show the areal extent of soils which exceed soil to groundwater screening.

### **Response Comment No. 32**

The text in the final RFI Report will include a discussion of the SSL exceedences and Figures 6-1 and 6-2 will be revised to show the extent of the exceedences.

### **Comment No. 33**

Conclusions, p. 9-5, fourth bullet: As noted in earlier comments, vapor intrusion risks to onsite workers are likely underestimated. In addition, exposure to contaminated soil and/or free product by construction workers can be minimized while these areas are under the control of Wheeling Pitt. No such guarantees can be given for future workers, and additional consideration to the final disposition of these contaminated areas should be included in future work at the facility.

### **Response Comment No. 33**

As discussed in the response to Comment No. 14, potential exposures via the indoor air pathway for onsite workers will be addressed under the OSHA program for the facility. The OSHA program is currently being revised to include all on or below-grade structures that are occupied by workers and could potentially be impacted by vapor intrusion from soil or groundwater. The revised program will be provided to EPA when it is completed.

The risk calculations for the future use scenario will be revised to include the recommended defaults in the J&E model, and methods to mitigate potential risks to future onsite workers will be addressed in the CMS.

### **Comment No. 34**

Conclusions, p. 9-6, third bullet: Although there is no use of groundwater under current conditions, in accordance with EPA groundwater use policy, restoration of groundwater to maximum beneficial uses must be included as a remedial goal, regardless of actual current uses for groundwater beneath the site. These goals should be considered during the CMS phase.



## **RESPONSES TO JULY 8, 2009 U.S. EPA COMMENT LETTER (Continued)**

### **Response Comment No. 34**

These goals will be considered during the CMS phase.

### **Comment No. 35**

Conclusions, p. 9-6, fourth bullet: As noted in earlier comments, risks to onsite commercial/industrial workers due to vapor intrusion from groundwater are not acceptable. Unacceptable risks from vapor-forming chemicals reported in groundwater were identified for the byproducts area.

### **Response Comment No. 35**

See response to Comments 14 and 33 above.

### **Comment No. 36**

Conclusions, p 9-7, Free Product in Subsurface: The text states that the extent of coal tar derivative materials in the former Ash Screening Area was well delineated. More delineation is needed in this area. SBE 8, 9 and 10 all encountered coal tar material, but there are no borings north, south, and east of these locations to determine extent. The additional borings SBE 12, 13, 14, and 15 on the western side of this area did not go all the way through the fill, and do not appear to have gone as deep in elevation as where coal tar was encountered in the other borings. This should be addressed in the next phase of work.

### **Response Comment No. 36**

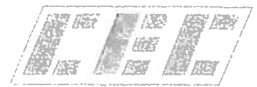
Additional borings are proposed in the former ash screening area as described in the enclosed Phase II Workplan.

### **Comment No. 37**

Recommendations, p. 9-8, third bullet: Additional samples are proposed for the hillside area. A risk assessment should also be performed which evaluates current and future uses of this area, including residential users. Note that background samples are generally used to establish site-specific reference concentrations for metals only.

### **Response Comment No. 37**

The locations of the additional samples in the hillside area are shown in the enclosed Phase II Workplan. The sampling results from the hillside area will be incorporated into the risk assessment in the final RFI Report as appropriate.



## RESPONSES TO JULY 8, 2009 U.S. EPA COMMENT LETTER (Continued)

### **Comment No. 38**

Recommendations, p. 9-8, fifth bullet: The proposed actions will address only current potential exposures to indoor vapors. Potential future risks to workers not employed by Wheeling Pitt are not considered; therefore, long-term measures to mitigate such risks should be considered.

### **Response Comment No. 38**

Refer to response to Comments 14 and 33 above.

### **Comment No. 39**

Recommendations, p. 9-8, last bullet: With regard to scope of assessment that could be undertaken with respect to impacts on Mahan's Run, these activities (additional groundwater, surface water, and sediment sampling and analysis) should be undertaken.

### **Response Comment No. 39**

Additional sediment samples are proposed in Mahan's Run as described in the enclosed Phase II Workplan.

### **Comment No. 40**

Recommendations, p. 9-09: The text recommends additional perched zone wells downgradient of the Light Oil Refining Area. Alluvial zone wells are also needed downgradient of this area. These wells should be installed in the next phase of work.

### **Response Comment No. 40**

Additional perched and alluvial zone wells are proposed downgradient of the Light Oil Refining Area as described in the enclosed Phase II Workplan.

### **Comment No. 41**

Recommendations, p. 9-7 through 9-9: The scope of the proposed additional activities (with changes suggested above) seems appropriate as a next step. WPSC should provide a work plan for these activities.

### **Response Comment No. 41**

The proposed additional investigation activities are described in the enclosed Phase II Workplan.

### **Comment No. 42**

Appendix Q, Groundwater to indoor air evaluation: Concentration terms listed for 1,2-dichloroethane and toluene are incorrect. Values should be 7.23 ug/l for 1,2-dichloroethane, and 2470 ug/l for toluene.





**RESPONSES TO JULY 8, 2009 U.S. EPA COMMENT LETTER  
(Continued)**

**Response Comment No. 42**

The concentration terms for these constituents will be corrected in the final RFI Report.

**Comment No. 43**

Appendix Q, J&E model inputs: Model inputs for the sandy loam soil type in Appendix Q documentation do not agree with default J&E values for this soil type. If site specific soil properties are used, they should be supported with independent references.

**Response Comment No. 43**

Documentation for the site-specific soil properties used in the J&E model will be provided in the final RFI Report.